Killer Hardware Tips

A Mouse Of A Different Glow, TV Really Big & Add Storage To Your DVD Player

IF YOU'RE A USER WHO CAN'T LEAVE THINGS ALONE IF THERE'S A CHANCE YOU CAN MAKE THEM BETTER, EVEN IF IT MEANS BUCKING THE NORM, READ ON. WE HAVE SOME TIPS and tricks that just might make you more productive.

Blue Light Special

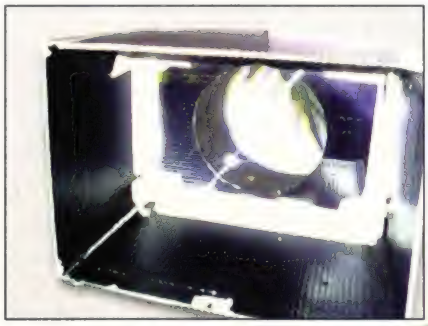
What color does your mouse glow? Optical mice typically rely on red LEDs to illuminate the mousing surface. Miguel Fernandez, founder of ExtremeMhz.com, discovered that there's nothing magical about the color red. With some careful soldering, you can replace your mouse's red LED with other colors. Want a blue, green, yellow, or orange glow to emanate from your mouse? No problem. If you prefer no glow at all, you can install an infrared LED.

Fernandez wrote a how-to guide for replacing a mouse's LED (www.extrememhz.com/mouseled1.shtml). Also check out www.skybusiness.com/ntanner/Mouse_mod.htm for more on mouse LED replacement.

"I wouldn't say it's tricky, but you will need some basic soldering skills in order to desolder the existing LED and solder back the new one," says Fernandez. "The time it takes to perform this mod may vary depending on the mouse and your soldering skills. I would say about 15 minutes or so."

The LED in an optical mouse provides light for a tiny black-and-white camera to see the mousing surface. Experts say that CMOS sensors have a peak sensitivity around 700nm, which matches the abilities of a red LED. Blue LEDs are at the other end of the color spectrum, at about 400nm.

"A red LED provides the best spectrum of color to accentuate any differences of the surface for mouse tracking. It really is a finely tuned engine," says Lloyd Klarke, Logitech product manager. "Any changes will affect the performance of the product. If a customer is trying to get the best performance out of a mouse, changing the LED will not do that. If they are looking to experiment or turn their desktop a different color, certainly they can get it to work. I don't doubt that at all."



With some cardboard, tape, and a cheap Fresnel lens, you can turn your itty-bitty TV or computer monitor into an enormous projected image.

"To compensate for the lack of sensor sensitivity, the intensity of light would need to be increased, but light intensity is limited by Class 1 eye safety regulations, the intrinsic capabilities of LEDs, and power consumption through USB," says Klarke.

Fernandez recommends high-intensity LEDs with a rating above 2,400mcd but less than 6,000mcd. (MCD, or millicandela, refers to the brightness of the LED.) If the LED isn't bright enough, you will lose the ability to accurately control the pointer.

Really Big Screen TV

Any video game player will tell you that a bigger screen is a better screen. Why play on a 12-inch screen when you can play on a 20-incher? And why stick with 20 inches when you can get 50? So then, why limit yourself to a 50-inch so-called "big screen TV" when you can play on a 12-foot, 6-inch screen?

MyImax.com sells a $21.95 kit that turns any television or computer monitor into a 150-inch image. The kit includes construction plans and a magnifying lens you use to build a projection box out of wood or cardboard. The project takes about an hour, according to the company. When you place the box in front of your TV or monitor, the image is projected on your wall, theater style. Other sites also sell plans-and-lens combos, including Earthprofit.com and A2Z Technology (www.webtv100inch.com). You'll find free plans for building a projection box at www.diyprojectiontv.tk.

You'll need a Fresnel lens (one of those thin, plastic magnifiers often seen on the back of RVs), cardboard, tape, and black paint. You'll also need a bit of patience to navigate this funky site.

After your box is built, you just need a dark room and large blank surface on which to enjoy the abnormally huge image. Because the Fresnel lens inverts the picture, most plans require you to turn the television upside down so the projected image is right side up. Like a movie theater projector, the distance between the projector and screen determines the size of the image. The lens' position within the projection box sets the focus of the image.

LaserMAME (games.lasers.org) is another oversized image hack; it's a modification to the Multiple Arcade Machine Emulator project (www.mame.net) that lets a PC drive a Pangolin QM2000 laser show controller card. The result is that you can play classic vector games, such as Tempest and Asteroids, by projecting them onto huge surfaces, such as a side of a building or even low clouds.

An IDE cable connects this DVD player to an external drive bay. You can swap out a CompactFlash reader or removable hard drive for moving data between a PC and the DVD player.

Doing this yourself isn't quite as cheap as slapping a lens in front of a raster monitor. According to the LaserMAME Web page, a minimalist, monochrome setup for single-color games like Asteroids would cost $4,000 to $5,000. Conversely, a professional full-color setup could cost as much as $30,000.

Add Storage To Your DVD Player

If tricking out your PC hardware ever gets tiresome, retire to the family room and start upgrading your home theater. How about adding storage to your DVD player? A Web site called Area 450 (www.area450.com/thesampozone/articles/connectindex.htm) explains how to hack your DVD player by adding a hard drive, CompactFlash reader, and even an external DVD-ROM drive.

Most of the site's articles focus on mods to Sampo-brand DVD players. Although not a particularly well-known brand, Sampo's players are especially hackable because of their firmware and use of IDE-compatible drive mechanisms.

"The fact that almost all of the Sampo players use an IDE interface for the DVD loader means that you can replace the stock loader with a conventional PC DVD drive," says Craig Clontz, a founder of Area 450. "Some people have done this as a do-it-yourself repair for players that have gone bad, and some people have swapped their loaders with drives capable of playing higher bit-rate material from CD-R, such as SVCDs and mini DVDs."

Clontz adds, "The presence of an IDE interface was an intriguing factor among hardware hackers from the start because it implied that it might be possible to connect an IDE hard drive to these players." This possibility became reality with Sampo's introduction of the DVE-631CF player, which included a CompactFlash reader and, for the first time, firmware routines to communicate with a slave device on the IDE bus.

"Since a CompactFlash card in an IDE adapter functions just like a solid-state hard disk, the implication was that a hard drive could be placed on the IDE bus instead of the CF adapter. And it worked," Clontz says.

These hardware hacks aren't necessarily limited to Sampo players. Many players from other manufacturers also use IDE interfaces for their DVD loaders and use the same video processor, allowing them to use the DVE-631CF firmware or a modified variant. A community of firmware hackers called the "One Firmware for All" (http://groups.yahoo.com/group/OneFirmwareForAll) is active in porting this firmware to other players.

Why would you want to add a hard drive to your DVD player? "Having a hard drive on your player can allow you to create a mega audio/video jukebox," says Clontz. "The DVE-631CF allows the playback of raw JPEG picture files, MP3 audio files, and MPEG movie files using a nice 26-character file name navigation system."

In short, adding a CompactFlash reader to your DVD player would let you display pictures from your digital camera on the television. You could put your entire audio CD collection on a hard drive as MP3 files and have it available for playback on your DVD player and home theater audio system. The players can't rip information from the internal DVD drive to the hard drive, so you have to copy all the files to the hard drive from a standard PC. Video clips can be in MPEG-1 or MPEG-2. DivX and other AVI formats aren't supported.

The amount of material you can store depends on the hard drive's size, bit rate, and video resolution of the media files. Clontz estimates 1GB per hour of medium-quality MPEG-2 video or 2GB per hour for DVD-quality video.

The Area 450 site includes several projects, including installing a single hard drive, attaching an external drive bay, adding two DVD drives, and adding two hard drives—with no DVD drive installed at all. CPU

by Kevin Savetz

Infinite Loop

The Literary Computer

Many well-known authors shun computers for the reassuring clackety-clack of the typewriter or the sensual act of putting a pen to paper. Can you tell which of the following authors have hopped aboard the digital bandwagon and are now writing with computers?

1. Terry Brooks, "The Sword Of Shannara"
2. Tom Clancy, "Sum Of All Fears"
3. Michael Crichton, "Jurassic Park"
4. Don DeLillo, "Underworld"
5. John Irving, "A Prayer For Owen Meany"
6. Stephen King, "From A Buick 8"
7. Joyce Carol Oates, "I'll Take You There"
8. J.K. Rowling, "Harry Potter And The Goblet Of Fire"
9. Salman Rushdie, "The Satanic Verses"
10. Oliver Sacks, "The Man Who Mistook His Wife For A Hat"
11. Kurt Vonnegut, "Slaughterhouse-Five"

Answer: Authors 1, 2, 3, 8, 9, and 11 all use computers (2, 9, and 11 use Macs). Authors 4, 5, 6, 7, and 10 all use a typewriter or write by hand.

Sources: Authors On The Web, Barnes & Noble, BBC News, Doorly.com, January Magazine, MichaelCrichton.net, New York State Writers Institute, Papernews, University of San Francisco, Wired.com.